Table 14-1: Summary of Surficial Sediment Concentrations from Dundee Dam to Newark Bay

Analyte	Newark Bay 2005 [a,b]	Lower Passaic River 1995 [a,c]	Lower Passaic River 2005-2008 [a,d]	Dundee Dam Sediment Core Top (2005-2007 time horizon) [a]
Cadmium (mg/kg)	2.3 ±3.4 (N = 67)	5.1 ±3.1 (N = 95)	3.6 ±0.54 (N = 19)	1.50 ±0.40 (N =11)
Copper (mg/kg)	150 ±130 (N = 67)	230 ±250 (N = 95)	160 ±27 (N = 19)	63 ±12 (N =11)
Lead (mg/kg)	160 ±160 (N = 67)	330 ±150 (N = 90)	200 ±25 (N = 19)	130 ±23 (N =11)
Mercury (mg/kg)[f]	3.4 ±9.5 (N = 67)	3.3 ±1.9 (N = 92)	1.9 ±0.40 (N = 19)	0.72 ±0.39 (N =11)
Total PCB (µg/kg)[g]	750 ±1,100 (N = 67)	1,300 ±1,800 (N = 90)	1,200 ±190 (N = 10)	460 ±190 (N =8)
2,3,7,8-TCDD (ng/kg)	64 ±80 (N = 67)	830 ±2,000 (N = 95)	370 ±120 (N = 10)	1.9 ±0.63 (N =9)
Ratio of 2,3,7,8-TCDD/Total TCDD	0.4 ±0.1 (N = 67)	0.7 ±0.1 (N = 95)	0.69 ±0.05 (N = 10)	0.05 ±0.01 (N =9)

a: Arithmetic average and standard deviation (± 1 sigma) based on a normal distribution of sample size; nondetected values are incorporated into the average as half the reported detection limit. Results rounded to two significant figures, whenever possible.
b: The 2005 TSI Newark Bay dataset represents surficial sediment (0 to 6 inches) collected from net depositional and net non-depositional sampling locations.
c: The 1995 TSI Lower Passaic River dataset represents surficial sediment (0 to 6 inches) collected from net depositional and net non-depositional sampling locations.
d: The 2005 Malcolm Pirnie, Inc. dataset represents surficial sediment dating from 2003-2005 based on the estimated age of the surface layers and 2007-2008 surface sediment data are used.
e: This average excludes the one elevated value in Port Newark of 77 mg/kg.
f: Total PCB for the 2005 Newark Bay data and the 2005 Lower Passaic River data were calculated as the sum of congeners, (209 congeners and 159 congeners, respectively). The 1995 Lower Passaic River data and the Dundee Dam data represent the sum of Aroclors.

Table 14-2: Summary of Mann Kendall Results for 1963 Interpolated Concentrations and 1995 Concentrations

Analyte	1963 Trend Downriver [a, b, c]	1995 Trend Downriver [a, b, c]
Arsenic	**Increasing**	**Increasing**
Barium	No trend	No trend
Cadmium	No trend	No trend
Chromium	No trend	**Increasing**
Copper	No trend	No trend
Lead	No trend	**Decreasing**
Mercury	**Increasing**	**Increasing**
Nickel	No trend	No trend
Silver	No trend	No trend
Total PAH	No trend	**Decreasing**
Total Petroleum Hydrocarbon	No trend	No trend
2,3,7,8-TCDD	No trend	No trend
Total PCB	No trend	No trend

a: Trends are denoted as the change in concentration from upriver to downriver

b: Mann Kendall and confidence test performed according to *Guidance for Data Quality Assessment* (USEPA, 1998)

c: Refer to Appendix B for more details

Table 14-3: Summary Statistics of 1999-2000 Near-shore Data

	Copper (ng/g)	Lead (ng/g)	Mercury (ng/g)	Sum HMW (ng/g)	Sum LMW (ng/g)	4,4'-DDD (ng/g)	4,4'-DDE (ng/g)	4,4'-DDT (ng/g)	Dieldrin (ng/g)	Total Chlordane (ng/g)	2,3,7,8-TCDD (pg/g)	Total PCB (sum of 10 congeners) (mg/kg)	PCB TEQ (1998 Mammal) (mg/kg)	PCB TEQ (2005 Mammal) (mg/kg)	PCB TEQ (Fish) (mg/kg)	PCB TEQ (Bird) (mg/kg)
Count	77	77	77	74	74	77	77	77	77	77	75	77	77	77	77	77
Minimum	78,700	101,000	910	17,700	2,480	0	5	0	3	2	0	12	0.007	0.002	0.001	0.099
Maximum	807,000	824,000	21,600	131,000	35,200	224	314	1,080	38	117	4,330	410	0.289	0.331	0.015	2.24
Mean	203,000	274,000	3,070	36,100	5,820	44	45	75			403	92	0.078	0.080	0.005	0.589
Median	194,000	265,000	2,700	34,300	5,390	31	38	41	10	9	296	79	0.065	0.067	0.004	0.538
Std. Dev.	82,100	98,800	2,450	14,500	3,740	41	45	134			541	56	0.057	0.066	0.003	0.298
Std. Error	9,350	11,300	279	1,680	435	5	5	15			62	6	0.007	0.008	0.0003	0.034
Number of Non Detects (U)[1]	0	0	0	0	0	17	17	18	77	75	0	97	171	171	171	171
Number of Rejected Samples (R)	0	0	0	0	0	1	0	2	0	0	0	6	11	11	11	11

Note:

1. Inclusion of Non-detects and Rejections:

DDD, DDE, DDT, Dieldrin - Non-detects are included in the statistics at the detection levels.

Total Chlordane - In every case, both alpha and gamma compounds were non-detected, so the number used in the statistics is half of the maximum detection limit.

Sum of 10 PCB Congeners - Reported numbers of non-detects are across all the congeners included. There were 77 samples, each analyzed for 10 congeners, making a total of 770 values, of which 97 were non-detect and 6 were rejected. Rejections were included as zero; non-detects were included at the detection limit

PCB TEQs - Reported numbers of non-detects are across all the congeners included. There were 77 samples, each analyzed for 12 congeners, making a total of 924 values, of which 171 were non-detect and 11 were rejected. Rejections were included in the statistics as zero; non-detects were included at the detection limit.

Table 14-4: Sedimentation Rates for High Resolution Cores

Sediment Core	Sedimentation Rate Based on 1963 (centimeter/year)	Sedimentation Rate Between 1954 and 1963 (centimeter/year)
RM1.4	5.2	13
RM2.2	10	16
RM7.8	2.0	NA
RM11	2.3	11
RM12.6	3.2	NA

NA = not applicable

Table 14-5: Recently Deposited Surface Sediment Definition for the Dated Sediment Cores

Sediment Core	Time Horizon	Sediment Thickness (centimeters)
RM1.4	2005-2002	15
RM2.2	2005-2003	18
RM7.8	2005-2003	3
RM11	2005-2002	6
RM12.6	2005-2003	6

Table 14-6: Average Lower Passaic River Surface Sediment Concentrations for Select Contaminants

Analyte	Average Concentration (RM1.4, RM2.2, RM7.8, RM11, and RM12.6)
Mercury (mg/kg)	1.8
Lead (mg/kg)	210
Cadmium (mg/kg)	3.6
Trans-Chlordane (µg/kg)	33
DDE (µg/kg)	54
2,3,7,8-TCDD (ng/kg) [a]	280[a]
Total TCDD (ng/kg) [a]	420[a]
BZ 31 (µg/kg)	26
BZ 52 (µg/kg)	35
BZ 61+66+70+74+76 (µg/kg)	85
BZ 83+99 (µg/kg)	21
BZ 90+101+113 (µg/kg)	34
BZ 93+95+98+100+102 (µg/kg)	28
BZ 110+111+115 (µg/kg)	35
BZ 129+138+158+160+163+164 (µg/kg)	45
BZ 139+140+147+149 (µg/kg)	34
BZ 170 (µg/kg)	11
BZ 180+193 (µg/kg)	27
Benz[a]anthracene (mg/kg)	3.1
Benzo[a]pyrene (mg/kg)	3.6
Chrysene (mg/kg)	4.3
Fluoranthene (mg/kg)	6.5
Indeno[1,2,3-cd]pyrene (mg/kg)	2.9
Pyrene (mg/kg)	6.1

a: Average concentration for only three river locations (RM1.4, RM2.2, and RM11)
Concentrations rounded to two significant figures.

Table 14-7: Ratio of 2,3,7,8-TCDD/Total TCDD Measured on Suspended Solids

Analyte[a]	Average Surface Sediment	Average USGS TOPS	Infiltrex Program	TOPS Laboratory
2,3,7,8-TCDD (µg/kg)	0.28 ±0.079 (N = 3)	0.57 ±0.57 (N = 18)	0.22 (N = 1)	0.17 (N = 1)
Total TCDD (µg/kg)	0.42 ±0.11 (N = 3)	0.78 ±0.62 (N = 18)	0.32 (N = 1)	0.25 (N = 1)
Ratio 2,3,7,8-TCDD/Total TCDD	0.65 ±0.024 (N = 3)	0.72 ±0.15 (N = 18)	0.69 (N = 1)	0.68 (N = 1)

a: Arithmetic average and standard deviation (± 1 sigma) based on a normal distribution of sample size. .
N = sample size